THE PENNY MAGAZINE

OF THE

Society for the Diffusion of Useful Knowledge.

523.] PUBLISHED EVERY SATURDAY. [May 30, 1840.

WALTHAM ABBEY

[Waltham Abbey, from the north-west.]

Waltham Abbey, or Holy Cross, is situated on the eastern bank of the river Lea, at the distance of twelve miles and a half from London; the latter name is derived from a holy cross, asserted to have been brought hither by miraculous means during the reign of Canute. Tovi, standard-bearer to Canute, founded here a religious house for two priests, to whose charge the sacred relic was committed. After the death of Athelstan, the son and successor of Tovi, the estate, it appears, reverted to the crown. The lordship was then given by the monarch (Edward the Confessor) to Harold, on condition that he should build a college, and furnish it with all necessaries, relics, dresses, and ornaments, in memory of Edward and his spouse Editha. Harold in consequence rebuilt the church, increased the number of priests to twelve, one of whom was the governor, under the title of dean, gave it ample endowments, and, so far as the time permitted, made it an excellent school of learning. No less than seventeen manors were granted on this occasion by Harold, and confirmed to the establishment by the charter granted by Edward. Previous to the fatal battle of Hastings, Harold here offered up his vows, and afterwards was brought here for interment with his two brothers, by their miserable mother Githa, who with great difficulty obtained Harold's remains from the Conqueror. The canons on Harold's favourite foundation also experienced William's resentment; it is said that he despoiled them of all their moveable wealth; their lands, however, he left nearly entire. Waltham continued a college until 1177, when it was dissolved on account of the lewdness and debauchery of the members, by Henry II., and an abbey for regular canons founded in its stead, whose number, according to Farmer, in his 'History of Waltham Abbey,' amounted to twenty-four. The Conqueror's charter was confirmed, as were also various subsequent additional grants, and two new manors were granted.

In 1191 Waltham was made a mitred abbey. Richard I. gave the abbey the whole manor of Waltham, with the great woods and park called Harold's park, and other lands, as well as the market of Waltham. Henry III. frequently resided here, and, as a mark of his favour, granted the Abbey a fair, to be held annually for seven days. During this reign the church was again solemnly dedicated in the presence of the king and many of the principal nobles. The body of Edward I. was brought here in 1307, with great pomp, where it remained for no less than fifteen weeks, during which time six religious men were chosen weekly from the neighbouring monasteries to attend it night and day. The abbey was surrendered to Henry VIII. at the dissolution, on the 23rd of March, in the thirty-first year of his reign, by Robert Fuller, the last abbot, who had previously made a vain effort to avert the impending ruin by presenting the king with the magnificent seat of Copt Hall. The net annual income at this period was 900*l.* 4*s.* 3*d.*

The only remains of the monastery are, a portion of the conventual church, which now forms the parish church, an entrance gateway and bridge across an arm of the Lea, some vaulted arches forming a kind of dark passage of two divisions, and some broken walls. The church must have been a magnificent specimen of Saxon architecture, if it were only from its great size. An idea

of the extent may be conveyed by stating that the site of Harold's tomb, which stood either in the east end of the choir, or in a chapel beyond, is no less than one hundred and twenty feet distant from the termination of the present edifice. The original church consisted of nave, transept, choir, and chapels. There was also a large tower rising from the intersection of the transept, containing "five great tuneable bells." Part of this tower having fallen, the remainder was undermined and blown up, the choir, tower, transept, and east chapel at once demolished. The nave and some adjacent chapels alone remained; the nave, as we have before stated, with its side aisles, forms the body of the present church. This is about ninety feet in length, and in breadth, including the side aisles, forty-eight feet: it is in the Norman style, with round massive piers dividing the nave from the aisles, semicircular arch, and zigzag enrichments. One of these piers on each side is decorated with spiral and another with very bold and rude zigzag indentations, which, it is supposed, were formerly filled up with brass or other metal. Above the first range of arches, supported on the piers we have mentioned, are two other tiers of arches: those of the second tier corresponding in width with those of the first, but being lower in height; the arches of the third tier are three to each arch of the lower tiers, with a window pierced in the middle one. The roof is modern and plain. At the west end of the church is a heavy square embattled tower, eighty-six feet high, bearing date 1558. From the south side of the church projects the Lady-chapel, now used as a vestry and school-room, under which is a fine arched crypt, "the fairest," says Fuller, who was the incumbent from 1648 to 1658, "I ever saw." Another little chapel, at the south-east end, is now a repository for rubbish. These chapels have some beautiful portions in the decorated English style. The windows in the south aisle have been but little altered. There is a fine wooden screen, bearing the arms of Philip and Mary, and a font, which appears to be very ancient. Near the screen there was formerly a painting on glass of Harold; this was destroyed by the Puritans during the reign of Charles I. Farmer observes that the church "is observed by all artists, and the most curious, to stand the exactest east and west of any other in Great Britain." The abbey refectory is reported to have stood eastward of the church, and the stables on the spot now known as the Abbey farm. The gateway we have mentioned is in a much later style of architecture than the church. In the gardens formerly attached to the Abbey is a tulip-tree, said to be the largest in England. Its circumference is stated, in Lewis's 'Topographical Dictionary,' to be nine feet six inches. Two stone coffins have been found at different periods, each of which was at first thought to be Harold's, but there appears to have been no proof of the correctness of the supposition.

The river Lea, at Waltham, divides into many small islands, bordered by fruitful meads and connected by bridges. These branches are traditionally said to flow in the channels originally made by Alfred, when he altered the course of the river, and left the Danish fleet dry on the shore.

The town of Waltham Abbey consists principally of one long street, irregularly built, about the centre of which stands the church. There are many good houses. The place is somewhat famous for its gunpowder manufactory. In one year (1813) no less than 80,000 barrels were made. The government powder-mills still employ many hands. The printing of silk handkerchiefs and the manufacture of pins are carried on to some extent; and in the neighbourhood is an extensive establishment for throwing and spinning silk. The schools and charities are numerous. There are meeting-houses for Baptists and Wesleyan Methodists. The market-day is Tuesday, and the fairs are the 14th of May, 25th of September, and 26th of September. This last is a statute fair. Population, in 1831, 2097.

Near the Abbey mills is a wide space of ground called the Bramblings, but formerly known by the name of Rome-land; owing, it is supposed, to the rents having been appropriated to the see of Rome. On this spot Henry VIII. had a small pleasure-house, which he occasionally occupied in his visits to Waltham. One of these visits led to an important event—the introduction of Cranmer to Henry, and his consequent elevation to influence and authority. The circumstances are thus related in the 'History of Essex:'*—"Henry VIII. possessed a house at Waltham, in the place called Rome-land, adjoining the abbey. Happening to pass a night there in 1529, his secretary, Dr. Stephens (afterwards so well known under the name of Gardiner), and his almoner Dr. Fox, afterwards bishop of Hereford, were lodged by the king's harbingers at the house of Mr. Cressey of Waltham; at the same time Dr. Cranmer and the two sons of Mr. Cressey, his pupils, were living there, being obliged to leave Cambridge on account of the plague. At supper, the conversation turning on the king's divorce, a common topic, discussed everywhere at that time, the courtiers, knowing the sound judgment and learning of Dr. Cranmer (with whom they had been previously acquainted), wished to have his opinion on the subject; which he modestly declined, but said that if the marriage were unlawful by any divine command or precept, the dispensation of the pope could not make it otherwise; and that it appeared to him an easier way to have the opinion of the learned men of our own and foreign countries; for if they decided in favour of the king, the pope must soon come to a conclusion which otherwise would not be effected by long fruitless negociation at the court of Rome. On their return to Greenwich, Dr. Fox acquainted the king with this new suggestion. Henry seemed highly delighted with the idea, and in his blunt manner declared "the man had got the right sow by the ear." Cranmer was immediately sent for to court, where he came very reluctantly. His subsequent history is too well known to need further notice here. We may merely observe that he was almost immediately sent on an embassy to Rome, and made archbishop of Canterbury four years after.

THE VALLEY OF THE TEES AND TYNE.

[Concluded from No. 522.]

The Valley of the Tyne, properly speaking, may be considered as extending from the sea at Tynemouth westward to the mountainous region already mentioned as stretching through a considerable part of Yorkshire, separating Westmoreland and Cumberland from Durham and Northumberland, and thence across the borders into Scotland. Previous to entering upon any local description of the country traversed by the river Tyne, it should be observed, that at the distance of about thirty miles from the sea it forms two branches, one being named the South Tyne and the other the North Tyne; and notwithstanding that the branch coming from the north has a considerably longer course, and serves as a channel to carry off the water from a much greater extent of country, it is the south branch that continues the general westerly direction of the first thirty miles of the valley onwards to the borders of Cumberland, and hence, by such as possess little knowledge respecting its sister stream, this is generally considered the main branch of this river.

The head-waters of the south branch interlock with the tributaries of the Wear in the mountain district in which is situated the town of Alston Moor, a district where lead-mining is the employment of most of the inhabitants; and here it may be remarked that lead-

* By Elizabeth Ogborne.

mines are common and even numerous in many situations both on the head-waters of the Tees and the Wear. Other branches rise on the confines of Cumberland, where they interlock with the tributaries of the Eden. Immediately at the extremity of the south valley of the Tyne there is so considerable a declension in the mountain-range, that it has been selected for the pass through which the railroad from Newcastle to Carlisle has been made. Descending the valley from Glenwhelt, a small village romantically situated in a deep valley one mile south of the old Picts' wall built nearly 1600 years ago, the only two places of any consequence at all lying westward of Hexham are Haltwhistle and Haydon Bridge. Two miles above the latter place the Allen pays its tribute to this branch of the Tyne, being the only tolerable-sized stream that enters into it. The soil generally, in this upper section of the valley, is by no means fertile, and the breadth of the flat land along the stream is very limited, even so much so that the railroad occasionally had to be dug out of the steep banks immediately adjoining the river. Below Haydon Bridge the valley widens so much that the river stretches away northward for three or four miles, after which it again turns to the east, and about a mile to the north of the ancient town of Hexham it is joined by the North Tyne. Hexham is a good-sized market-town, but has not much to recommend it to particular notice besides a fine old collegiate church.

Having reached the place where these rivers unite, some notice of the north branch may be appropriately introduced. The North Tyne is formed by the junction of two main branches of nearly equal size, both having their source in wild and mountainous regions (the commencement of the Cheviots), and on the very confines of Scotland. The general course of the more northerly of these being nearly due south, while that of the other is eastward, inclining a little towards the south. They unite a couple of miles below Bellingham, and follow the course of the river about twenty miles to where it unites with its sister branch, the South Tyne. Although the valleys of the upper parts of the two main branches, as well as several others down which tributary burns (streams) flow, are thinly peopled and partially cultivated, on the whole there is hardly a wilder range of mountain wastes to be met with England. In former times, particularly during the period of fierce border feuds, the inhabitants of those parts, as well as those on the head-waters of the Wear and Tees, were accounted the rudest people in all England. If such were then really the case, a greater improvement has been effected amongst them than among the other mountainous and isolated districts elsewhere; for although the peasantry are still in a great measure uneducated, superstitious, and rude in manners at the present day, they are not a whit more so than those inhabiting other mountain regions in the north: in mining districts in general but little can be said in favour of the morals of the people. The western route from Newcastle to Edinburgh traverses the upper section of the more north-easterly branch of the North Tyne. Throughout the great extent of country whose waters are drained off by the North Tyne, if we except the insignificant town of Bellingham, there is not a market-town existing, and scarcely any village of any note, although downwards from Bellingham a finer country can scarcely be imagined, the wild and barren regions being left behind. It is not only in a high state of cultivation, but abounds with parks, country-seats, and elegant mansions; and these particular features continue after the junction of the two rivers near Hexham all the way to Newcastle.

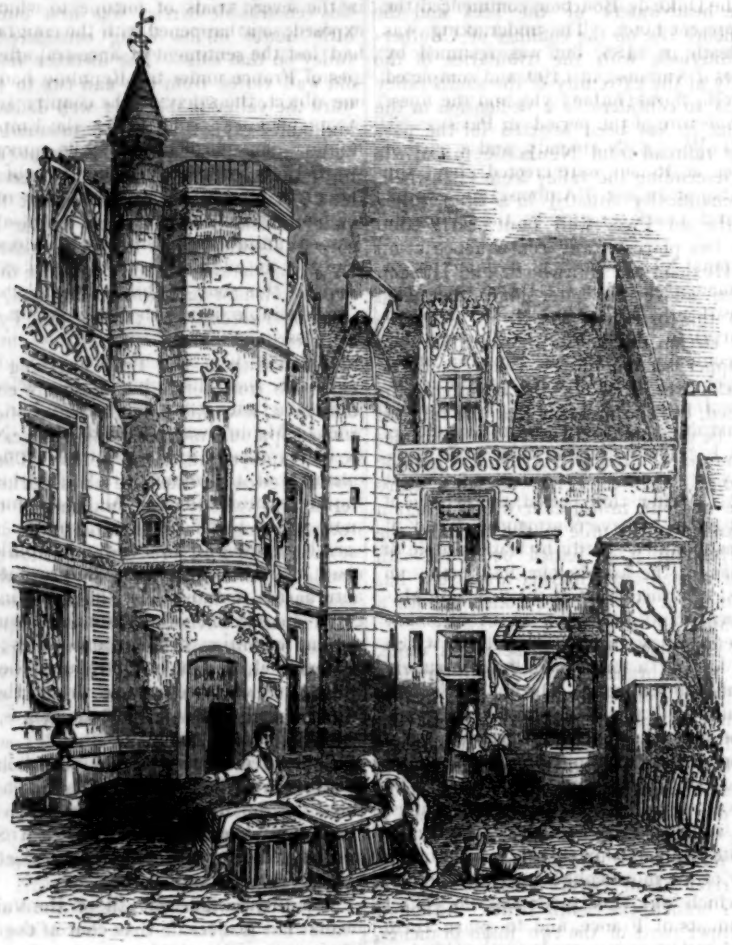
It might appear somewhat arbitrary to limit the extent of the Valley of the Tyne towards the north between Hexham and Newcastle, since there is no range of high ground by which valleys are commonly kept within certain limits. But there is the site of the ancient Picts' wall, though little of the wall itself remains; and when this remarkable barrier was first built, there seems but little doubt of its being considered as bounding the valley on that side. The distance from the river to the old wall varies from one and two to four miles. Southward the valley is tolerably well defined, for although the highlands cannot be called mountains which intervene between the Tyne and the Derwent (a large stream falling into the Tyne three miles west of Newcastle), the land is sufficiently elevated to limit the boundary of the valley. The Derwent is by far the largest stream that empties its waters into the Tyne to the east of Hexham; for a considerable distance it is the division of the counties of Durham and Northumberland, but from five miles west of Newcastle to the sea the Tyne divides the two counties.

The Valley of the Tyne has long been noted for its extensive iron-works, but these are confined to a limited district a few miles above Newcastle, where there are some populous mean-looking villages inhabited by persons employed in those works. There are also in and about Newcastle extensive glass-works, as also a few potteries, and various other branches of trade and manufactures existing; but the grand staple of this valley, from several miles west of Newcastle downwards, is coal, the traffic in which has for a long period been so extensive, that coals are familiarly called "Newcastle diamonds." This river is navigable for large ships as high as Newcastle, but most of the coals are shipped from the various railways that strike the river between this town and Shields; while merchant vessels generally load and unload at the wharfs in Newcastle. From this town to Shields (North and South Shields), seven miles, there is little that is interesting to those that are not connected with coals or the collieries; but in defiance of coals and coal smoke, Tynemouth, situated on the north shore of the river immediately below North Shields, is still frequented by persons who resort thither for sea-bathing during the summer season.

Upon the whole the soil of the Valley of the Tyne is somewhat less fertile than that of the Tees, and although there are more resident gentry in the vicinity of the former, the manufactures and commerce therewith connected give it a less agricultural character than belongs to the vale of which Cleveland forms so conspicuous a part.

Recreation for the People.—Another point which has appeared to me of great importance is to provide as many resources as possible of interest and amusement for their leisure hours; something to which they may return with renewed relish when their daily work is done; which may render their homes cheerful and happy, and may afford subjects of thought, conversation, and pursuit among them. The importance of this can only be estimated by observing the ruinous effects of the want of it—neglect of home and domestic duties—the frequenting of the public-house—contracting the habits of a drunkard, and seeking for pleasure among the vulgar amusements that brutalise their character, while they depress and impoverish their condition. But the source of the evil itself is the having nothing to do—nothing to supply that want of our nature which demands recreation after toil, as well as toil to give relish to recreation—nothing to occupy the thoughts, which insist on being occupied with *something*—nothing for him to pursue who is by nature an animal of pursuit—nothing innocently to engage the affections which absolutely refuse to be left void. This is the real evil—the foundation of the mischief. We blame our operative population because they indulge in low and vulgar pleasures. Why, they have nothing else to indulge in! Where are the innocent amusements provided for them? Where are the exalted pleasures they are invited to partake? Where are rational, virtuous, improving occupations afforded them? Where are sobriety, modesty, and good manners publicly encouraged and respected? In other countries those public places of amusement where different classes meet together in some measure, though very imperfectly, supply this deficiency.—*Mr. Greg's Letters to Mr. Horner on the Capabilities of the Factory System.*

ANTIQUITIES OF FRANCE.



[Hôtel de Cluny, Paris.]

In Paris the houses inhabited by the old nobility are generally termed hôtels, and bear the name of the family to whom they belong, or who occupy them for the time, as the Hôtel de Montmorency; and even the public buildings or government offices are called hôtels, as the Hôtel des Postes (General Post-Office), Hôtel des Monnaies (the Mint), Hôtel du Timbre (the Stamp-Office). The residences of some of the nobility in London were at one period called Inns, which has the same signification as hôtel, and several of the Inns of Court, as Gray's Inn, Furnival's Inn, Lincoln's Inn, and Clifford's Inn, were originally the residences of Lords Gray, Furnival, Lincoln, and Clifford. At the present time a nobleman's place of residence in London, if its pretensions are sufficient to distinguish it from the houses near it, is generally called after the title of its possessor, as Devonshire-house, belonging to the Duke of Devonshire, and Northumberland-house, at Charing-Cross, belonging to the Percy family. The latter will convey an idea of the hôtels belonging to the nobility in Paris; but the British Museum, formerly called Montagu-house, from being the residence of the Montagu family, is better known to a larger number of persons, and its resemblance to the hôtels of Paris is equally strong. Like them, the house cannot be seen from the street, from which it is separated by lofty walls, and visitors enter through a gateway into a spacious court or quadrangle: at the opposite end is the part containing the principal apartments, the buildings on each side serving for the domestics and other members of the household. Many of the hôtels in Paris contain within their enclosed walls an extensive garden, spacious court, stables, and offices. When the nobility kept large retinues, and Paris was often disturbed by factions, which the police was not sufficiently powerful to repress, these hôtels, resembling barracks from the number of their inmates, were characteristic of the times. Most of these relics of the middle ages are interesting from the historical events with which they are associated, or on account of the distinguished characters by whom they have been inhabited, while some are remarkable for their architecture, and others for their splendid internal decorations.

The Hôtel de Cluny, a view of which is given in the cut, is one of the most interesting hôtels in Paris. It is built in part on the site of a palace of the Roman emperors in Gaul, called the Palatium Thermarum, erected about A.D. 306, and which, from the foundations that have been traced, comprised a very large area. After the Roman domination had passed away, this palace was inhabited by Clovis, the founder of the French monarchy, who died A.D. 511, and also by several of his successors. The Roman antiquities of Paris were nearly destroyed by the Northmen during the melancholy period which preceded the accession of Hugues Capet, the founder of the third race of kings of France, who died A.D. 996; and he and his successors selected for their residence a palace which occupied the site of the Palais de Justice. In 1218 Philip Augustus gave the old Roman palace to one of his chamberlains, and about 1340, having been successively in the hands of various feudal lords and churchmen, it was sold to the abbot of Cluny; and on account of its vicinity to the college of Cluny, it was chosen as

the residence of the abbots, one of whom, Jean de Bourbon, natural son of the Duke de Bourbon, commenced the construction of the present hôtel. The undertaking was interrupted by his death, in 1485, but was resumed by the next abbot, Jaques d'Amboise, in 1490, and completed about 1505. It is in the florid Gothic style, and the finest specimen of the architecture of the period in Paris.

The château of Gaillon in Normandy, and a part of the Palace of Justice at Rouen, were erected about the same time, by a brother of Jaques d'Amboise, and exhibit the same architectural characteristics as the Hôtel de Cluny.

The widow of Louis XII., who was a daughter of Henry VII. of England, resided in the Hôtel de Cluny after her consort's death in 1515. The chamber is shown in which she was surprised by the Duke de Valois, afterwards Francis I., in company with Charles Brandon, Duke of Suffolk, whereupon he compelled her to marry the duke on the spot. James V. of Scotland also resided here for a short period after his marriage with Madeleine, daughter of Francis I. The hôtel was then in the possession of the family of Guise of Lorraine, in whom it remained until 1621. After this period, the decline of its former splendour seems to have commenced; and at the Revolution, it was tenanted chiefly by tradespeople of various kinds. Lalande, the astronomer, had made an observatory of one of the turrets; and the "section Marat," one of the fiercest and most violent revolutionary bodies of Paris, assembled within those walls in which the haughty feudal lord of a former age lived in stately pride amid his vassals and retainers. During the violent crises of the Revolution, all works of art, and religious edifices especially, became the objects of popular fury. Even the Convention set the example, and decreed that the tombs of the kings of France at St. Denis should be destroyed; and it was even discussed whether Versailles, the Porte St. Denis, and other public edifices, should not undergo the same fate; but fortunately this manifestation of opinion led a few of the more enlightened members to support a motion, which was finally adopted, to collect the moveable monuments of France, and to place them in a museum. This collection was made in the Hôtel de Cluny, under the direction of M. Alexander Lenoir, who arranged them in chronological order. When this good work was commenced, it required no small degree of courage to exhibit any feeling of regard for the monuments of the past. Both the state and individuals were also interested in the work of spoliation. The former melted the bells of the churches for coin; and the fine old abbeys were desecrated after the expulsion of the monks or pulled to pieces, and the materials appropriated by private individuals.

Little could be done by a few individuals against resistless multitudes actuated by the blindest fury and the wildest passions. Several of the great abbeys of Paris were accordingly almost totally destroyed during this period; and scarcely a vestige remains of the abbey of St. Victor, which covered twenty acres of ground. With the exception of Notre Dame, nearly all the chief buildings of the fourteenth century have disappeared. Only a few comparatively of the royal and noble monuments contained in the monasteries found their way into the museum of M. Lenoir. When the Restoration took place, and the ancient aristocracy returned with broken fortunes to France, they found their châteaux, their churches, and burial-grounds despoiled of their family effigies and monuments; and the king, while decreeing the restoration of such objects, took no sufficient precaution to ensure their falling into the hands of those who were legally entitled to them. Many of them were shovelled into carts, and conveyed nobody knew where. As a love for the past, and an interest and sympathy for the remote generations who were our progenitors, is liable to be destroyed for a time in the wild and stormy crises to which nations are subject, and in the severe trials of fortune to which individuals are exposed, so it happened with the emigrant noblesse: they had lost the sentiment of ancestral affection. The energies of France under the Republic had been directed to one object, the safety of the country and the destruction of its enemies; and under the Empire, the mania for military glory formed men's sole pursuit. During these two periods, scarcely any one thought of ought else but the great objects before them. There were, however, a few enlightened men who cultivated a knowledge of the national antiquities; but for all the rest, the past seemed scarcely to address itself to the existing generation. Happily this state of things, which characterised also in a considerable degree the early period of the Restoration, has passed away, and the study of the antiquities of the middle ages has been pursued in a philosophical spirit, and with that discernment and activity which distinguish the intellectual exertions of our neighbours. The work of M. du Sommerard, entitled 'Notices sur l'Hôtel de Cluny et sur le Palais des Thermes,' is a gratifying example of the manner in which this revived spirit of inquiry exhibits itself. M. du Sommerard occupied a part of the Hôtel de Cluny, and he has attracted universal attention to this and other buildings of the same class by interesting those who previously cared little for antiquarian remains. In the work in question he has given an account of the Roman towns of Gaul and the present condition of their antiquities; and in treating of the Hôtel itself, he has introduced the reader to a knowledge of the architecture and arts of the middle ages, the painting and sculpture, and the games, amusements, and manners of those times.

The government has now placed itself at the head of this movement, and has organised two bodies, one called the "Commission des Monuments Historiques," and the other the "Comité Historique des Arts et Monuments," and has besides instituted courses of lectures on Christian archæology.

The duty assigned to the "Commission des Monuments Historiques" is to collect documents relating to the history of all existing monuments in every part of France, and to give its opinion upon all affairs touching their maintenance and preservation. M. Montalivet, the Minister of the Interior, who appointed this committee, in September, 1837, addressed a circular letter to the prefects, requiring a list of all the most remarkable buildings in each of the eighty-six departments; and the committee selected ninety-five monuments in fifty-six departments as more particularly standing in need of the assistance of the administration, which had obtained a vote from the Chamber of Deputies of 200,000 francs for the purpose. This committee recommended that application should be made to the Chamber for a special grant for the great Roman monuments of Arles and Orange.

The "Comité Historique des Arts et Monuments," organised by the Minister of the Interior, in December, 1837, is charged with the duty of watching over and inspecting the works of art and monuments which may be classed among the antiquities of the country. The "Commission" indicates its views, and the "Comité" is entrusted with the power of carrying them into effect under the superintendence of the minister. It is proceeding to make an archæological survey of the whole of France, in which every monument of importance, amounting altogether to about three hundred, will be fully described and illustrated. Those of secondary importance will be described in a less elaborate manner. Statistical and "monographical" accounts are to be drawn up as models, to which all others will be made to conform. The arrondissement of Rheims, one of the richest in monuments, has been selected as the subject of a model-statistical account; and the model-statistical account of a great city will have Paris for its subject. The architec-

tural drawings and the historical descriptions are entrusted to eminent artists and writers. The scale of reduction and elevation fixed on is $\frac{1}{100}$ for plans and $\frac{1}{200}$ for views. For the subjects of the "model-monographical" descriptions of monuments, two churches of opposite characters have been selected, the cathedral of Noyon and that of Chartres, the former a specimen of a "severe and original church," and the latter the richest and most sumptuous building of the kind in France, and nearly half as large again as any other cathedral, possessing a fine series of early painted windows, which contain about nine thousand figures. The architectural drawings of this vast church are entrusted to one artist; those for the statuary to another; and M. Guizot, who was then Minister of Public Instruction, undertook to write the history of the building; while the archæological description will be written by M. Dindron, one of the secretaries of the "Comité." The drawings of the cathedral of Chartres are making on a scale of eight feet by six for the western front; twelve feet by eight for the longitudinal view and section; and the figures of the details are eighteen inches in height in their various plates. The Report of the "Comité" states that the scale of engraving for such a work as this is to be a certain multiple of that adopted for smaller buildings; and the same relative scales are to be adopted in all future monographical descriptions. A third kind of monographical account applies to edifices partly destroyed. The Committee distributed 36,000 circular letters in all the communes of the departments, and to the inspectors of primary schools, containing very succinct and precise questions relating to the Gallic, Roman, and Mediæval antiquities of France, so simple that the answers required were merely "yes" or "no." A series of manuals has also been commenced, which comprise the whole of the national antiquities under its divisions, architecture, painting, and sculpture. By these efforts the Committee expect in time to "to reduce the study of antiquity to the condition of an exact science."

The lectures on Christian Archæology, instituted by the Minister of Public Instruction, on the recommendation of the Committee, comprise Christian architecture, and painting and sculpture as they are connected with Christianity. They have excited great interest, and even enthusiasm, and the clergy are recommended to introduce similar courses in the ecclesiastical seminaries. The same minister has also commenced the foundation of an archæological library, and has given up one of the old churches of Paris for the purpose of forming a national museum of antiquities.

Such are the efforts which are making in France in a department of inquiry to which her attention has been but lately directed. We could not expect in England such energy and enthusiasm, combined with so much sound sense, upon any subject remote from our immediate interests. There is not a sufficient number of men of high taste and education to encourage each other in the cultivation of plans so extensive as those which are under the superintendence of the two bodies whose proceedings we have detailed. Even on subjects of quite another character, though still apart from money-getting, there is not that combination of effort which is indicative of energy and strength. For example, a good statistical account of England, resembling in some respects that which has been drawn up by the clergy in Scotland, would be a very valuable and important national undertaking; but the only approximation to such a work are the County Reports drawn up thirty and forty years ago, under the superintendence of the Board of Agriculture. What the French have done, and are doing, to illustrate the history of their country, should teach us to admire their mental activity and the many admirable qualifications which they possess, calculated to render their labours truly valuable.

SCALES AND WEIGHTS.—No. II.

In the former paper on this subject we treated of some of the various kinds of balances, or weighing scales, and have now to speak of the nature of the weights employed. We have hitherto merely said that certain metal weights are employed as a counterpoise to the goods bought and sold, but the determination of the sizes of those weights is altogether a different subject.

There is in reality no particular reason for employing weights of one scale of dimensions instead of another, provided those dimensions are well understood by both buyers and sellers; for it would amount to the same thing in the end whether what we call a "pound" were fifty per cent. over or as much under its present amount. The purchaser would obtain the same amount of commodity for the same price as he does now. The important part of the matter is, that when once the dimensions of the pieces of metal to be employed are fixed upon, they should remain permanent and general, so that a purchaser may know that a pound of a purchased commodity is an equal and equivalent quantity, whether he purchases at London or at York, in 1830 or in 1840. As unworthy persons might use light weights to deceive their customers, without the latter being at all times able to perceive it, it becomes necessary for the legislature to interfere, and enforce by penalty the adhesion to some particular standard of weight.

It appears that legislative enactments on this subject have been made at various times in the history of this country, the nature of some of which we will detail, as given in the Report of a Parliamentary Commission about twenty years ago.

King Edgar is said to have ordered a certain degree of uniformity in the weights of the kingdom in the year 975; but this was more completely done by a statute of William the Conqueror, in which it is ordered that all the weights and measures in the kingdom should be stamped. Richard I. caused several standard yards to be made in 1197; and it is said that this term "yard" was first applied to a measure exactly equalling in length the arm of a preceding monarch, Henry I. King John confirmed the legality of the weights and measures in Magna Charta. The first means we have of knowing the real nature of the standard of weight is by a statute of Henry III., in 1266, which declares "that an English peny, called a sterling, round and without clipping, shall weigh thirty-two wheat-corns in the midst of the ear, and twenty pence to make one ounce, and twelve ounces one pound, and eight pound do make a gallon of wine, and eight gallons of wine do make a London bushel, which is the eighth part of a quarter." Rude as this method is, we see in it an attempt to reduce coinage, weight, and measure of capacity, to the same standard. Most of the subsequent enactments related rather to measures than to weights, but as the present article is devoted to the latter subject only, we will pass over details relating to the former.

It appears that a *wheat-corn* was the first standard of weight in England, and it is supposed that the metallic weight called a *grain* became used as a representative of the wheat-corn, and that the modern troy grain is nearly the same. After a time, the pennyweight, or "sterling," was reduced from 32 to 24 grains; 20 pennyweights made an ounce, and 12 ounces one pound: this was called the *troy pound*, and became the standard of English weight, consisting of 5760 grains. But still the legislature could not ensure uniformity in the weights; for there was the moneyer's pound of 5400 grains, the avoirdupois pound of 7000 grains, and the old commercial pound of 7600 grains.

In the time of Elizabeth a standard of the avoirdupois pound was placed in the Exchequer, and standards of the troy pound were placed in the Exchequer, Goldsmiths' Hall, and in the Mint. Nothing particular seems to

have occurred with regard to the standard of weight till 1758, when a Committee of the House of Commons was appointed to investigate the subject of weights and measures. The results arrived at with respect to measures we will not here detail, but the decision as to weights we must briefly consider. On comparing the troy pound kept at the Mint with that at the Exchequer, it was found that the former was 1¼ grains heavier than the latter; and as the Exchequer pound had been in frequent use for 170 years, the Committee concluded that it had become somewhat worn, and accordingly they adopted the Mint pound. It was then considered whether the English standard should in future be the troy or the avoirdupois pound; and they resolved on the former, for these reasons: that it is "the weight best known to the English law; that which hath been longest in use; that by which our coins are measured; that which is best known to the rest of the world; that to which our learned countrymen have referred and compared ancient and modern weights; the weight which hath been subdivided into the smallest parts." The Committee then proceeded to obtain, with the utmost possible exactness, standard weights of the several parts of the pound troy, in which they were assisted by a balance constructed by Mr. Bird, which would turn with the 2000th part of a grain. One copy of the standard troy pound was delivered to the House of Commons, and another to the king's assay-master of the Mint, in whose possession also was, and we believe still is, Mr. Bird's weighing apparatus.

We now pass on to the year 1814, when a motion was made in the House of Commons to inquire into the standards of weights and measures. A Committee was appointed, who examined scientific men, and brought in a Report; on this Report a bill was founded, which passed the House of Commons, but was thrown out by the Lords. In 1816 an address was presented to the Prince Regent, praying for the appointment of a government committee to consider the whole subject in a scientific point of view. The Commissioners appointed were, Sir G. Clerk, Mr. Davies Gilbert, Dr. Wollaston, Dr. Young, and Captain Kater; and these gentlemen, after a very elaborate inquiry, particularly on the part of Captain Kater, presented three Reports, relating to different parts of the subject. Of these Reports we shall only speak of that part relating to the standard of weight. It was considered, after mature deliberation, that there was no sufficient ground for changing the standard of weight; the troy pound of 1758, kept by the clerk of the House of Commons, was therefore declared to be the standard of English weight, that it was to be deemed as containing 5760 grains, and that the pound avoirdupois should be equal to 7000 such grains. There were reasons urged why the English standard should be assimilated to that of France (of which we shall presently speak), but the Commissioners decided against it, because "it is scarcely possible that the departure from a standard once universally established in a great country should not produce much more labour and inconvenience in its internal relations than it could ever be expected to save in the operations of foreign commerce and correspondence." But in the event of the parliamentary standard being lost, destroyed, or injured, the means of regaining it were provided for thus:—A cubic inch of distilled water, at a temperature of 62° Fahr. and 30° bar., was accurately weighed, and found to be equal to 252·458 troy grains; from which it may be deduced that the weight of a troy pennyweight is to that of a cubic inch of water, in the state above alluded to, in the proportion of 24·000 to 252·458; we have therefore the means, at any future period, of producing a standard troy pound exactly equal to that constructed by Bird in 1758, and placed in the custody of the House of Commons. A circumstance was pointed out in the 'Companion to the British Almanac' for 1828, which makes the above verification totally independent of the graduation of the thermometer employed: it is this—that the temperature (62° Fahr.) at which the water has been fixed for the determination of the standards of weight and measure is one which is situated above the freezing-point, at exactly the sixth part of the distance between the freezing and the boiling points. The determination is therefore independent of the mode of graduation of the instrument employed.

The recommendations of the Commissioners were generally approved of, and two acts of parliament were passed, in 1824 and 1825, to put them in operation. But so difficult is it to eradicate early formed and long employed habits and customs, that it was found that many of the provisions of these acts were slighted, and the most heterogeneous modes of weighing and measuring still prevailed. For instance, although a hundredweight of rope contained 112 lbs., yet a hundred weight of twine, even in the same manufactory, was often considered as equal only to 100 lbs.; and a cwt. of potatoes was, under different circumstances, reckoned at 120, 126, and 132 lbs. A new act, having for its object to remove part of the discrepancies, came into operation in 1835, among the provisions of which were—that all weights used should be either of lead or pewter; that all weights verified and stamped at the Exchequer should be legal, whether their shape agree with the Exchequer standard or not; that copies of the standard weights should be provided for each county; that the stone (which had formerly been equal to 14 lbs. for some purposes and 8 lbs. for others) should be uniformly equal to 14 lbs; and that 8 stone, or 112 lbs., should form 1 cwt.

We may therefore briefly sum up the present state of things in England with regard to weight. Gold, silver, and precious stones are reckoned by troy weight, the pound being equal to 5760 grains, and being subdivided into ounces, pennyweights, and grains, a standard troy pound being preserved with great care. The more bulky commodities bought by weight are estimated by the avoirdupois pound of 7000 grains, which is subdivided into ounces, drams or drachms, and grains. Drugs, as bought wholesale, are reckoned by avoirdupois weight, but when retailed in the state of medicines, they are reckoned by the troy pound, the subdivisions of which, for the apothecary's purpose, are into ounces, drachms, scruples, and grains, instead of ounces, pennyweights, and grains. Although diamonds are in reality sold by troy weight, yet the unit measure is called the carat, equal to 3½ grains troy. In order to reduce the weight of any substance from avoirdupois to troy, or the contrary, it will be useful to bear in mind that the avoirdupois pound is greater than the troy pound in the proportion of 175 to 144, and the avoirdupois ounce is less than the troy ounce in the proportion of 175 to 192.

We must now cross the Channel, and speak of the highly scientific system of weights adopted by the French. It will be seen that in England, notwithstanding the improvements that have been made, the standard of weight really rests on nothing more precise than that of a wheat-corn, and the standard of length on the length of the arm of one of our early kings. The French weights and measures, until the last thirty or forty years, were in principle but little better. Soon after the Revolution, the French mathematicians turned their attention to the introduction of a decimal system of notation on as extensive a scale as might be practicable. There are certain facilities in computation afforded by the decimal notation which will be easily understood by those familiar with arithmetic. In familiar language we may say, that instead of dividing a quantity into halves, quarters, half-quarters, &c., as we are accustomed to do, the decimal notation divides it into tenths, hundredths, thousandths, &c. It was proposed to introduce the decimal mode of

division into weights and measures, but it was deemed expedient first to obtain a rigorous standard of weight, of length, and of bulk, in lieu of the imperfect ones then in use. For this purpose they sought for a standard among the unchangeable works of nature, as being of more constant application than any of the productions of man. The circumference of the globe was fixed upon; for we have no reason to believe that this circumference increases or diminishes.

The distance from either pole to the equator is mathematically equal to one quarter of the circumference passing through both poles, and is therefore called a quadrant, and it was determined to make the ten-millionth part of this quadrant a standard of measure from which a standard of weight might be deduced. The next point, therefore, was to determine the exact number of toises (or any other known measure of length) equal to a quadrant of the earth's circumference. This was a very delicate operation, requiring the resources of the astronomer and the mathematician. The result arrived at was, that the distance from the north pole to the equator was equal to 5,130,470 French toises, or 10,936,578 English yards. The ten-millionth part of this quantity was taken as the standard of length, and called a *mètre*, being equal to about 39·37 English inches. From this standard were obtained not only other measures of length, but also measures of weight and of capacity, the decimal mode of subdivision being employed throughout. We will, in accordance with our plan hitherto, speak only of those arrangements relative to weight. The hundredth part of a mètre is called a centimètre. Suppose, then, that we have a centimètre cube of distilled water at its point of greatest condensation (about 39·38° Fahr.); the weight of this cube is the unit or standard of weight, and is called a gramme. By using Greek prefixes, expressions are obtained for 10, 100, 1000, and 10,000 grammes, and by the use of Latin prefixes, we obtain names for the 10th, 100th, 1000th, &c. of a gramme: thus decagramme is equal to ten grammes, decigramme equalling the tenth of a gramme, the one being a Greek and the other a Latin prefix. The silver coinage of France rests on the same basis, a franc being the weight of five grammes of silver nine-tenths pure.

This system has been found very advantageous in a scientific point of view, but the government found insuperable difficulty in persuading the trading part of the nation, particularly the humble classes, to accede to it. It is in some respects more difficult than the old system to uninformed persons, and the legislature countenanced a kind of medium system between the two, called the système usuel. In this the mètre is still the standard; but quantities are divided into halves and quarters instead of tenths, &c., and many of the old terms are used, with the term usuel annexed. The old system, employed till the end of the last century, consisted of livres, ounces, gros, and grains, and the système usuel also consists of those denominations, but they are not equivalent in value, the livre usuelle being derived directly from the kilogramme, and differing slightly from the old livre, or livre de Marc. At the present day we believe that the système usuelle is pretty generally adopted in retail transactions, except perhaps in remote country places, while the système metrique is employed for all scientific purposes.

Having thus briefly described the systems of weights employed in England and in France, we have done all that our limits permit, for almost every state in Europe has a system peculiar to itself, either in the names employed or in the value of the weights to which the names are attached: thus the Hamburg pfund (pound) is equal to 1·068 English avoirdupois pounds, and the Prussian pfund equal to 1·0311 English pounds, and probably no pfund throughout Germany exactly equals that of England; indeed, the pfunde of Germany, the pounds of England, the livres of France, and the libbre of Italy, though apparently derived from similar sources, generally differ from one another. Every country where the attempt has been made has afforded evidence how difficult it is to institute changes in the customary modes of proceeding in these matters.

Mexican Architecture.—One of the most stupendous monuments of this style of architecture was the great temple at Palenque (built, according to the bold assumption of Lord Kingsborough, after the model of that of Solomon), which comprised within its extensive precincts various sanctuaries and sepulchres, courts and cloisters, subterraneous galleries, and cells for the habitation of the priests. The whole rests on a platform composed of three graduated terraces, and forms a spacious quadrangle enclosed by porticoes. On each side of the exterior is an ascent or flight of stairs, and on the east a second flight leading down, after the first is ascended, into the cloistered court. Beneath the cloisters are what are conjectured to have been initiatory galleries; and in the centre of the quadrangle is what appears to be the ruins of an altar or 'high place.' The city of Palenque itself exhibits a variety of buildings, temples, palaces, baths, and private houses, all manifesting excellence of workmanship combined with considerable skill in design. The remains of a palace at Mitla show that it must have been an edifice of great extent and grandeur; and the walls appear to have been sculptured or tooled externally, in imitation of mat or basket work, a species of decoration characteristic of Toltecan taste, and often found in sepulchral chambers. This same building has also a portico with plain cylindrical columns, differing from any found elsewhere. In order to give an idea of the extraordinary vastness of some of these Mexican or Toltecan constructions, we may adduce the instance furnished by the great teocalli, or pyramid, of Cholula, the side of whose base is 1440 feet, whereas that of the great pyramid of Jizeh is only 763 feet. The height however is, according to Humboldt, not more than 177 feet, and as the receding terraces are very wide, and the area of the upper platform or terrace small in comparison with the area of the base, the outline of the whole would not be that of a continuous pyramid, but merely such as might be inscribed within such figure. At Teotihuacan, about eight leagues to the north-east of the city of Mexico, are an immense number of pyramids, several hundred small ones ranged in files or lines, and two larger ones consecrated to the sun and moon. Each of the latter is divided into four platforms, the slopes between which consisted of steps, and on the summit was a colossal stone statue covered with plates of gold, which were stripped off by Cortes's soldiers, and the statues themselves destroyed. Besides monuments which are chiefly works of magnificence, others exist which attest the high degree of civilization attained by the Toltecans, such as Cyclopean roads and bridges. The former of these were constructed of huge blocks of stone, and frequently carried on a continued level, so as to be viaducts across valleys. There are also throughout Central America numerous excavations or rock-hewn halls and caverns, called by the natives 'granaries of the giants.' They resemble the Cyclopean fabric near Argos known by the name of the Treasury of Atreus, are generally dome-shaped, and the central apartment is lighted through an aperture in its vault. Other points of resemblance to Cyclopean masonry may be found in the doorways to these subterraneous galleries and apartments, which are similar to the gate of Mycenæ; and also in the peculiar triangular arch formed by courses of stones projecting over each other. Arches of this mode of construction are found in the cloisters of the building at Palenque. The remains of sculpture found in Mexico are numerous, and of great variety both of form and material. Captain Vetch has described (*Lond. Geogr. Journal*, vol. vii., p. 1) a collection of stone figures in his possession, which were recently procured from the banks of the river Panuco.—*Penny Cyclopædia.*

*** The Office of the Society for the Diffusion of Useful Knowledge is at 59, Lincoln's Inn Fields.

LONDON: CHARLES KNIGHT & CO., 22, LUDGATE-STREET.
Printed by William Clowes & Sons, Stamford-Street.